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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,829	10/15/2003	Franz Chmela	66376-333-7	9861
25269	7590	05/16/2006	EXAMINER	
DYKEMA GOSSETT PLLC FRANKLIN SQUARE, THIRD FLOOR WEST 1300 I STREET, NW WASHINGTON, DC 20005			KWON, JOHN	
			ART UNIT	PAPER NUMBER
			3747	

DATE MAILED: 05/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/684,829

**Applicant(s)**

CHMELA ET AL.

**Examiner**

John T. Kwon

**Art Unit**

3747

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 March 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 27,28,32-54 and 57-61 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27,28,32-54 and 57-61 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 53, 54 and 59-62 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrases “may be” or “can be” are indefinite.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 27-29, 32-36, 38-48, are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimoda (US 6, 338,245) in view of Flynn (US 2001/0017127) and Andersson (US 6 712 036). Shimoda discloses a direct injection diesel internal combustion engine with a fuel injection initiated at a crank angle between 30-10 BTDC before the top dead center and the exhaust gas recirculation rate of 40% and 60%, and the second operating condition, the fuel injected between 0 and 20 BTDC (Col. 7, line 40 – Col. 8, line 10). However, Shimoda does not show the use of a specific crank angle for the injection and the injection pressure. Flynn shows that the provision of an specific crank angle for the injection is old and well known in the art (Col. ). Since the

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prior art references art from the same field of endeavor, the purpose disclosed by Flynn would have been recognized in the pertinent art of Shimoda. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the device of Shimoda with the specific injection angle as taught by Flynn. Shimoda as modified shows the engine with the specific injection angle as explained above, but does not show the use of the specific injection pressure. Andersson shows that the provision of a specific injection pressure is old and well known in the art (Col. 3, lines 40-60). Since the prior art references art from the same field of endeavor, the purpose disclosed by Andersson would have been recognized in the pertinent art of Shimoda. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the device of Shimoda with the specific injection pressure as taught by Andersson. Regarding the claimed mean pressure, air ratio, and the phases of the changeover, it would have been considered to be an obvious choice of mechanical design because one skilled in this art is familiar with basic fuel injection pressure, ration and the phases and normally has the laboratory test facilities. To optimize or select the suitable crank angle for the injection would be within the ability of ordinary skilled in this art.

Claims 30, 31, 37, 49-52, and 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimoda (US 6, 338,245) in view of Ganser (US 5 458 293). Shimoda discloses the direct injection diesel internal combustion engine with the crank angle for fuel injection as explained above, but does not show the specific fuel pressure for injecting the fuel. Ganser shows that the various range of the fuel pressure is known for the various injecting purpose. Since the prior art references art from the same field of endeavor, the purpose disclosed

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by Ganser would have been recognized in the pertinent art of Shimoda. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the device of Shimoda with the various fuel injection pressure as taught by Ganser.

Regarding the claimed particular pressure for the injection, it would have been considered to be an obvious choice of mechanical design because one skilled in this art is familiar with basic fluid mechanic and normally has the laboratory test facilities. To optimize or select the suitable injection pressure would be within the ability of ordinary skilled in this art.

Claims 53, 54, and 58-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimoda (US 6, 338,245) in view of Andersson (US 6 712 036). Shimoda discloses a direct injection diesel internal combustion engine with a fuel injection initiated at a crank angle between 30-10 BTDC before the top dead center and the exhaust gas recirculation rate of 40% and 60%, and the second operating condition, the fuel injected between 0 and 20 BTDC (Col. 7, line 40 – Col. 8, line 10). However, Shimoda does not show the use of a specific injection pressure. Andersson shows that the provision of a specific injection pressure is old and well known in the art (Col. 3, lines 40-60). Since the prior art references art from the same field of endeavor, the purpose disclosed by Andersson would have been recognized in the pertinent art of Shimoda. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the device of Shimoda with the specific injection pressure as taught by Andersson. Regarding the claimed particular valve activations, it would have been considered to be an obvious choice of mechanical design because one skilled in this art is familiar with basic valve mechanic and normally has the laboratory test facilities. To

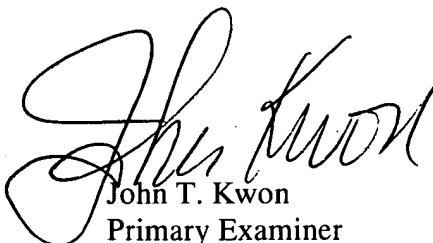
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optimize or select the suitable valve activation would be within the ability of ordinary skilled in this art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John T. Kwon whose telephone number is (571) 272-4846. The examiner can normally be reached on M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Yuen can be reached on (571) 272-4856. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
John T. Kwon  
Primary Examiner  
Art Unit 3747

April 27, 2006